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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
3404 E. Harmony Road
Mail Stop 35
FORT COLLINS, CO 80528

EXAMINER	
WASHBURN, DANIEL C	
ART UNIT	**PAPER NUMBER**
2628	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
ipa.mail@hp.com
laura.m.clark@hp.com

Office Action Summary	Application No.	Applicant(s)	
	10/644,273	CARROLL, JEREMY JOHN	
	Examiner	Art Unit	
	DANIEL WASHBURN	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,8-11,13-19,22,25,26,28-30 and 33-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-4,6,8-11,13,14,19 and 28-30* is/are allowed.

6)☒ Claim(s) *15-18,22,25,26 and 33-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/24/09 has been entered.

Response to Arguments

As an initial matter the 35 USC 101 rejections have been withdrawn in view of Applicant's amendments to claims 15 and 34.

Applicant's arguments with respect to independent claims 1 and 19 and the dependent claims that depend therefrom have been considered but are moot in view of the allowance of these claims.

Applicant's remaining arguments filed 11/24/09 have been fully considered but they are not persuasive.

As to Applicant's argument that, “Ryall nowhere mentions canonicalizing of graphs or representations of graphs.”

The Examiner contests that at least the visual organization feature (VOF) that creates a sequential placement of nodes, described in Ryall at FIG. 3A and 3:44-49 ("This can be selected in the horizontal ... or vertical ... direction."), is considered a VOF that generates a canonical representation of a graph. Regardless of the initial ordering

and layout of nodes the result of applying the sequential order VOF is always the same; thus, at least the sequential order VOF is considered to create a canonical representation of a graph.

As to Applicant's argument that, "O'Neil fails to suggest naming based on a limited examination" of nodes around a specific node,

the Examiner contests that O'Neil, at 6:48-7:55, describes, "Each node in tree 300 is assigned a position identifier 325 referred to as an "ORDPATH." Position identifiers 325 represent both the hierarchical and left-to-right position in tree 300 of a given node. That is, given the position identifiers 325 of any two nodes in tree 300, it is possible to determine whether one of the nodes is an ancestor (or descendent) of the other, and, if so, how many "generations" or "levels" separate the nodes. Moreover, it is possible to determine which of the nodes appears to the left (or right) of the other. The "ORDPATH" shown in FIG. 3 is an exemplary numbering scheme for position identifiers 325. In this numbering scheme, node 302 is assigned the position identifier '1'. All child nodes of node 302 are assigned position identifiers that begin with '1' – i.e., '1.1' for node 304, '1.3' for node 306, and '1.5' for node 308. Similarly, since node 308 has position identifier '1.5', all child nodes of node 308 have position identifier that begin with '1.5'. Thus, nodes 310, 312, and 314 have position identifiers '1.5.1', '1.5.3', and '1.5.5', respectively."

Further, 8:53-9:12 describes that when inserting nodes into a tree, each newly inserted node is assigned a node identifier according to the nodes that immediately surround the inserted node.

Thus, O'Neil is considered to describe naming a node based on a limited examination of the nodes that surround the node.

Finally, as to Applicant's argument that, "Hussam and Ryall further fail to suggest treating some blank nodes differently from others", as purportedly claimed in claim 22,

the Examiner contests that claim 22 does not require that some blank nodes are treated differently than others, it only requires that some blank nodes are assigned a label and other blank nodes are modified in some way (labeling nodes is considered modifying them). Thus, this argument is considered moot.

Allowable Subject Matter

Claims 1-4, 6, 8-11, 13, 14, 19, and 28-30 are allowed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 17, 25, 26, and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hussam (US 2003/0050927) in view of Ryall et al. (US 6,774,899), and further in view of O'Neil et al. (US 6,889,226).

RE claim 17 (dependent from claim 15), Hussam describes an RDF graph that includes blank nodes (0096-0101).

Hussam doesn't describe but Ryall describes a method according to claim 15, wherein the modification of the nodes comprises adding data to said representation

such that the remaining nodes can be labelled and labelling said nodes accordingly (3:31-32 describes that selection button 143 is used for adding or changing text labels on nodes).

Given that Hussam discloses a system and method for creating an RDF graph that includes blank nodes, and Ryall describes a system and method for labeling nodes on a graph, the combination is considered to suggest a method according to claim 15, wherein the modification of the unlabelled blank nodes comprises adding data to said representation such that the remaining unlabelled blank nodes can be labelled and labelling said blank nodes accordingly. See the rejection of claim 15 for rationale to combine Ryall with Hussam.

Hussam in view of Ryall doesn't describe but O'Neil suggests a system wherein the nodes are deterministically labeled (see the rejection of claim 25, the nodes are labeled according to their position in the hierarchical structure, which is considered a deterministic labeling).

See the rejection of claim 25 for rationale to combine O'Neil with Hussam and Ryall.

RE claim 25 Hussam describes a method for a data processing system to generate a signature for data that corresponds to an RDF graph having a plurality of blank nodes, the method comprising the steps of:

generating an RDF graph with a plurality of triples and a plurality of blank nodes (0093-0101 describes that RDF models with RDF triples can be represented graphically using node and arc diagrams, as illustrated in Figure 2. Further, 0100-0101 and Figure

4 describe a node that doesn't have a URI associated with it. Hussam describes that such nodes are referred to as anonymous (or blank) nodes. Thus, Hussam describes creating an RDF graph with a plurality of triples and a plurality of blank nodes); and

generating the signature in the form of a triple (0103-0104 describes that resource description communities require the ability to record certain things about certain kinds of resources. For example, in describing bibliographic resources, it is common to use descriptive attributes such as 'author', 'title', and 'subject'. For digital certification, attributes (considered to be included as part of one or more triples) such as 'checksum' and 'authorization' are often required).

Hussam doesn't describe but Ryall describes a system and method

wherein the method is used to canonicalize a graph by ordering some of the nodes that make up the graph while omitting others (3:14-4:21 describes canonicalizing one or more nodes of a graph using one or more VOFs),

wherein the method that the data processing system uses to canonicalize the graph employs a first set of rules, a second set of rules, and a third set of rules,

wherein the first set of rules includes generating a representation of the graph and ordering the representation, a plurality of nodes being substantially omitted from the ordering process (3:14-4:21 describes selecting one or more nodes on the graph and applying one or more VOFs to the selected nodes. Applying one or more VOFs (e.g., sequentially order nodes or arrange nodes in a T-shape layout) to one or more selected nodes is considered ordering the representation of a generated graph, wherein a

plurality of nodes (i.e., the nodes that weren't selected) are omitted from the ordering process),

the first set of rules further assigning a different respective label to some of the nodes (3:31-32 and 4:10-21 describes that a user can use selection button 143 to add or change text labels on the nodes, which is considered assigning a different respective label to some of the nodes, as the user writes a description into the nodes that he selects for editing);

wherein the second set of rules includes modifying nodes that remain unlabelled (3:31-32 and 4:10-21 describes that a user can use selection button 143 to add or change text labels on the nodes, which is considered modifying any nodes that remain unlabelled, as the user writes a description into the nodes that he selects for editing); and

wherein the third set of rules includes reordering the representation (3:14-4:21 describes that after a user has added labels to the nodes the user can apply one or more VOFs to the nodes, where the VOFs are considered to reorder the representation).

Ryall doesn't explicitly describe blank nodes; however, if Hussam is modified to include the graph manipulation system described in Ryall then the graph manipulation system described in Ryall would be used to apply VOFs and node labels to the RDF graph disclosed in Hussam. Thus, the combination is considered to suggest a system and method including

canonicalizing the RDF graph by ordering triples from the RDF graph and omitting blank nodes from the process of so ordering; and generating the signature in the form of a triple, wherein the method that the data processing system uses to canonicalize the RDF graph employs a first set of rules, a second set of rules, and a third set of rules,

wherein the first set of rules includes generating a representation of the RDF graph and ordering the representation, the plurality of blank nodes being substantially omitted from the ordering process, the first set of rules further assigning a different respective label to each of those blank nodes (Ryall describes that specific nodes can be selected in order to apply VOFs to the selected nodes and/or nodes can be selected in order to add a label to the node (see above), thus, given the teachings of Hussam that some RDF nodes a blank nodes, a user is considered to be able to omit blank nodes from the selection of nodes and further is able to label blank nodes);

wherein the second set of rules includes modifying blank nodes that remain unlabelled (Ryall describes that nodes can be labeled (see above)); and

wherein the third set of rules includes reordering the representation (once again, Ryall describes that specific nodes (which may include all the nodes) can be selected in order to apply VOFs to the selected nodes (see above)).

All the above-described elements of claim 25 are known in Hussam in view of Ryall, the only difference is the combination of known elements into a single system and method.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in Hussam the system and method for a data processing system to generate a signature for data that correspond to an RDF graph having a plurality of blank nodes, the method comprising the steps of:

canonicalizing the RDF graph by ordering triples from the RDF graph and omitting blank nodes from the process of so ordering; and generating the signature in the form of a triple, wherein the method that the data processing system uses to canonicalize the RDF graph employs a first set of rules, a second set of rules, and a third set of rules,

wherein the first set of rules includes generating a representation of the RDF graph and ordering the representation, the plurality of blank nodes being substantially omitted from the ordering process, the first set of rules further assigning a different respective label to each of those blank nodes;

wherein the second set of rules includes modifying blank nodes that remain unlabelled; and

wherein the third set of rules includes reordering the representation,

as suggested by Ryall, as the additional functionality of manipulating the RDF graph in order to make it more visually organized and thus easier to understand doesn't change the basic structure and relationships of the elements that make up the RDF graph, and it could be used to achieve the predictable result of allowing a user to quickly and easily make modifications to the graph without requiring the user to manually adjust

the position of each node when (1) changing the overall ordering of the graph or (2) rebalancing the graph to make it easier to understand.

Hussam in view of Ryall doesn't describe but O'Neil suggests processing in accordance with a first set of rules that includes assigning a different respective label to those nodes that are determined, by a limited examination around each node, to be distinguishable from the other nodes by their respective connected features of the RDF graph, the assignment of the labels to these nodes being based on an ordering dependent on the connected features that distinguish them (1:38-65 "The present invention provides a technique for representing hierarchical data in a non-hierarchical data structure…This structure may be captured with a position-identifier scheme referred to herein as "ORDPATH." A position-identifier is a label associated with each node represented in hierarchical data. The position identifier captures position information about the node that represents both the level in the hierarchy at which the node appears, as well as the node's relationship to its ancestors and descendants." … 6:9-27 "FIG. 3 shows a tree data structure 300 that represents the hierarchically-organized data 200 depicted in FIG. 2. Tree 300 comprises a plurality of nodes 302-314." … 6:48-7:55 "Each node in tree 300 is assigned a position identifier 325 referred to as an "ORDPATH." Position identifiers 325 represent both the hierarchical and left-to-right position in tree 300 of a given node. That is, given the position identifiers 325 of any two nodes in tree 300, it is possible to determine whether one of the nodes is an ancestor (or descendent) of the other, and, if so, how many "generations" or "levels" separate the nodes. Moreover, it is possible to determine which of the nodes appears

to the left (or right) of the other. The "ORDPATH" shown in FIG. 3 is an exemplary numbering scheme for position identifiers 325.").

O'Neil doesn't explicitly describe working with blank nodes; however, if Hussam is modified to include the graph manipulation system described in Ryall in view of O'Neil then the graph labeling system described in O'Neil would be used to apply the disclosed labeling scheme to the RDF graph disclosed in Hussam. Thus, the combination is considered to suggest a system and method wherein processing in accordance with a first set of rules further includes assigning a different respective label to those blank nodes that are determined, by a limited examination around each node, to be distinguishable from the other blank nodes by their respective connected features of the RDF graph, the assignment of the labels to these blank nodes being based on an ordering dependent on the connected features that distinguish them.

All the elements of claim 25 are known in Hussam, Ryall, and O'Neil, the only difference is the combination of known elements into a single system and method.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in Hussam and Ryall the system and method wherein processing in accordance with a first set of rules further includes assigning a different respective label to those blank nodes that are determined, by a limited examination around each node, to be distinguishable from the other blank nodes by their respective connected features of the RDF graph, the assignment of the labels to these blank nodes being based on an ordering dependent on the connected features that distinguish them, as suggested by O'Neil, as this doesn't change the overall operation of the system

disclosed in Hussam in view of Ryall, and it could be used to achieve the predictable result of allowing a user to quickly and easily determine the relationships among nodes, based on the applied hierarchical numbering scheme, such that patterns, similarities, and groupings among nodes can be established quickly and accurately (O'Neil 1:14-35).

RE claim 26, Hussam describes a method according to claim 25 further comprising the step of including the signature triple with other triples of the RDF graph (0103-0104 describes triples with attributes such as 'checksum' and 'authorization'; thus, the signature triple is considered to be included with other triples in the graph).

RE claim 33 (dependent from claim 15), see the corresponding limitation in the rejection of claim 25 above, as it is considered applicable here as well.

RE claim 34, see the corresponding limitations in the rejection of claim 25 above, as they are considered applicable here as well. Regarding the additional limitation that the graph representation is reordered based on the labels and the modifications, Ryall at 4:13-15 describes that a user defines the characteristics and the labels for nodes, and 3:44-49 describes that one of the VOFs is a VOF that organizes the nodes such that they are sequentially displayed (FIG. 3A); thus, reordering the representation may be based on the labels and the modifications made to the nodes, when the modifying includes modifying the sequential number of a node within a sequence of nodes. See the rejection of claim 25 for rationale.

RE claim 35, Hussam doesn't describe but Ryall describes a method according to claim 34, wherein the reordering depends on a lexicographic order of the labels

(3:44-49 and FIG. 3A describe reordering nodes of a graph in lexicographic order (described as sequential order in Ryall)).

See the rejection of claim 25 for rationale.

Claims 15, 16, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hussam (US 2003/0050927) in view of Ryall et al. (US 6,774,899).

RE claims 15 and 22, Hussam describes a system, method, and computer program stored on a computer readable medium that cause the computer to canonicalize an RDF graph having a plurality of blank nodes by: generating in a processing system a representation corresponding to the RDF graph (0093-0101 describes that RDF models can be represented graphically using node and arc diagrams, as illustrated in Figure 2. Further, 0100-0101 and Figure 4 describe a node that doesn't have a URI associated with it. Hussam describes that such nodes are referred to as anonymous (or blank) nodes. Thus, Hussam describes creating an RDF graph with a plurality of blank nodes).

Hussam doesn't describe but Ryall describes a method and computer program stored on a computer readable medium (2:66-3:3) for processing data in a data processing system, the method comprising the steps of:

generating a representation corresponding to a graph and ordering the representation, a plurality of nodes being substantially omitted from the ordering process (3:14-4:21 describes selecting one or more nodes on the graph and applying one or more VOFs to the selected nodes. Applying one or more VOFs (e.g.,

sequentially order nodes or arrange nodes in a T-shape layout) to one or more selected nodes is considered ordering the representation of a generated graph, wherein a plurality of nodes (i.e., the nodes that weren't selected) are omitted from the ordering process);

assigning a different respective label to each of a number of the plurality of nodes (3:31-32 and 4:10-21 describes that a user can use selection button 143 to add or change text labels on the nodes, which is considered assigning a different respective label to each of a number of the plurality of nodes, as the user writes a description into the nodes that he selects for editing);

modifying the nodes that remain unlabelled (3:31-32 and 4:10-21 describes that a user can use selection button 143 to add or change text labels on the nodes, which is considered modifying the representation of the graph in respect of nodes that remain unlabelled, as the user writes a description into the nodes that he selects for editing); and

reordering the representation using the labels and the modifications to produce in the processing system a canonical representation of the graph (3:14-4:21 describes that after a user has added labels to the nodes the user can apply one or more VOFs to the nodes, where the VOFs are considered to reorder the representation. Also see the rejection of claim 34, which describes that one of the VOFs places the nodes in sequential order, where the sequential order of nodes is considered to be based on labels and modifications to produce a canonical representation of the graph).

Ryall doesn't explicitly describe blank nodes; however, if Hussam is modified to include the graph manipulation system described in Ryall then the graph manipulation system described in Ryall would be used to apply VOFs and node labels to the RDF graph disclosed in Hussam. Thus, the combination is considered to suggest a system and method as claimed.

All the elements of claims 15 and 22 are known in Hussam in view of Ryall, the only difference is the combination of known elements into a single system and method.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in Hussam the system and method comprising the steps of:

generating in a processing system a representation corresponding to a graph and ordering the representation, a plurality of blank nodes being substantially omitted from the ordering process; assigning a different respective label to each of a number of the plurality of blank nodes; modifying the blank nodes that remain unlabelled; and reordering the representation using the labels and the modifications to produce in the processing system a canonical representation of the graph, as suggested by Ryall, as the additional functionality of manipulating the RDF graph in order to make it more visually organized and thus easier to understand doesn't change the basic structure and relationships of the elements that make up the RDF graph, and it could be used to achieve the predictable result of allowing a user to quickly and easily make modifications to the graph without requiring the user to manually adjust the position of each node when (1) changing the overall ordering of the graph or (2) rebalancing the graph to make it easier to understand.

RE claim 16, Hussam describes an RDF graph that includes blank nodes (0096-0101).

Hussam doesn't describe but Ryall describes a method according to claim 15, wherein the modification of the nodes comprises deleting said nodes (3:34 describes that selection button 145 is used to delete nodes).

Given that Hussam discloses a system and method for creating an RDF graph that includes blank nodes, and Ryall describes a system and method for manipulating graphs, which includes deleting nodes, the combination is considered to suggest a method according to claim 15, wherein the modification of the unlabelled blank nodes comprises deleting said blank nodes. See the rejection of claim 15 for rationale to combine Ryall with Hussam.

RE claim 18, Hussam describes a method according to claim 15 wherein the representation is an N-Triple document (0096 describes that RDF is based on a mathematical model that provides a mechanism for grouping together sets of very simple metadata statements known as triples).

Hussam doesn't describe but Ryall describes that the ordering is in a lexicographic ordering (3:42-49 describes that one of the VOFs places the nodes in sequential order). See the rejection of claim 15 for rationale to combine Ryall with Hussam.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Mui et al. (US 2003/0229529), Helgeson et al. (US 6,643,652),

Sarkar (US 6,418,448), NPL document "Unparsing RDF/XML", by Jeremy J. Carroll, and NPL document "Matching RDF Graphs", by Jeremy J. Carroll.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL WASHBURN whose telephone number is (571)272-5551. The examiner can normally be reached on Monday through Friday 9:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DANIEL WASHBURN/
Examiner, Art Unit 2628
1/28/10